3 Starting MS-DOS

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Loading MS-DOS

In this chapter you will learn about how to start your computer with MS-DOS and some of the basic techniques you will need to work with your operating system. Also, if you have a fixed disk drive in your computer, this chapter contains information about setting up MS-DOS on a fixed disk and some tips on using this type of disk drive.

If MS-DOS is already installed on your fixed disk, some of the information in this chapter may be familiar to you. Review each section in this chapter to be sure that you understand how to begin using MS-DOS with your computer.

There are two types of MS-DOS commands: internal and external.

Internal commands are placed into memory whenever you start your computer with MS-DOS. Internal commands are the MS-DOS operations you use most often. For example, **DIR** is an internal command.

External commands are the MS-DOS files on the System diskette placed in your computer's memory when you specifically need them to do some task. For example, the FORMAT command is an external command.

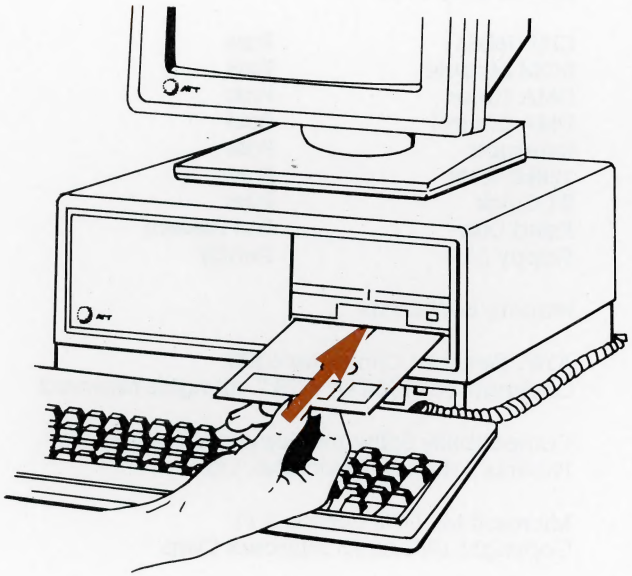
When you load or start MS-DOS, the MS-DOS internal commands are read from the COMMAND.COM file on the MS-DOS diskette and placed into the computer's memory.

After this process is completed, the MS-DOS prompt appears and you can enter a command.

Inserting Diskettes

To insert the diskette properly:

1. Remove the diskette from its paper sleeve.
2. Open the diskette drive door.
3. Slide the diskette into drive A with the label side up. Do not force or bend the diskette.
4. Shut the drive door carefully.



If Your Computer Is OFF

1 Insert the MS-DOS diskette into drive A and shut the drive door.

2 Turn on your computer.

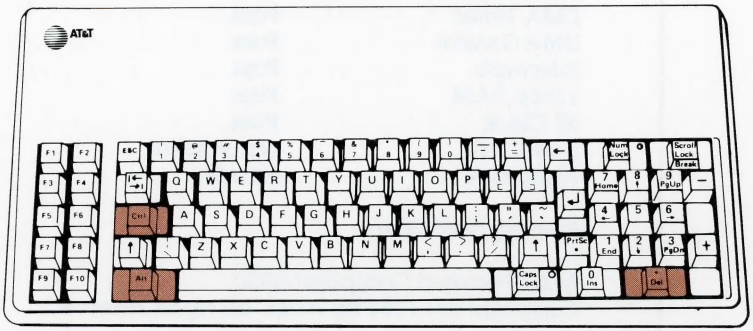
A few seconds elapse as the system checks itself. The more memory in your computer, the longer this check-out period lasts. The following messages appear on your screen. The exact wording or sequence may vary depending on your computer.

```
Resident Diagnostics
Rev 1.0 May 1984

CPU (i8086)          Pass
ROM Module           Pass
DMA Timer            Pass
DMA Control          Pass
Interrupts           Pass
128kb RAM            Pass
RT Clock             Pass
Fixed Disk           Not Present
Floppy (A:)          Ready

Primary Boot-Strap . . .

AT&T Personal Computer 6300
Copyright (c) 1984 by AT&T, all rights reserved

Compatibility Software Copyright (c) 1984 by
Phoenix Software Associates, Ltd.

Microsoft MS-DOS version 2.11
Copyright 1981,82,83 Microsoft Corp.

Command v. 2.11

A>
A>
```

If Your Computer Is ON

1 Insert the MS-DOS diskette into drive A and shut the drive door.

2 Press and hold the System Reset keys:



and then release them.

The diskette drive light comes on while MS-DOS is being read into memory.

When MS-DOS Is Ready: The Prompt

After MS-DOS is loaded into memory, your screen looks like this:

```
Resident Diagnostics
Rev 1.0 May 1984

CPU (i8086)              Pass
ROM Module               Pass
DMA Timer                Pass
DMA Control              Pass
Interrupts               Pass
128kb RAM                Pass
RT Clock                 Pass
Fixed Disk               Not Present
Floppy (A:)              Ready

Primary Boot-Strap . . .

AT&T Personal Computer 6300
Copyright (c) 1984 by AT&T, all rights reserved

Compatibility Software Copyright (c) 1984
by Phoenix Software Associates, Ltd.

Microsoft MS-DOS version 2.11
Copyright 1981,82,83 Microsoft Corp.

Command v. 2.11

A>
A>
```

The A> on the screen is the MS-DOS prompt. Whenever this prompt appears, you know that MS-DOS is ready to go. A> prompts you, indicating that you must tell MS-DOS what to do next by entering a command.

Entering Commands

To make your computer perform a task, you must tell it what to do. This is called entering a command. The various MS-DOS commands perform different tasks such as displaying a list of files on a diskette (the DIR command), or backing up a diskette (the DISKCOPY command).

Most MS-DOS commands do one thing. You tell your computer to do "this" or "that" with a single command.

To give MS-DOS a command:

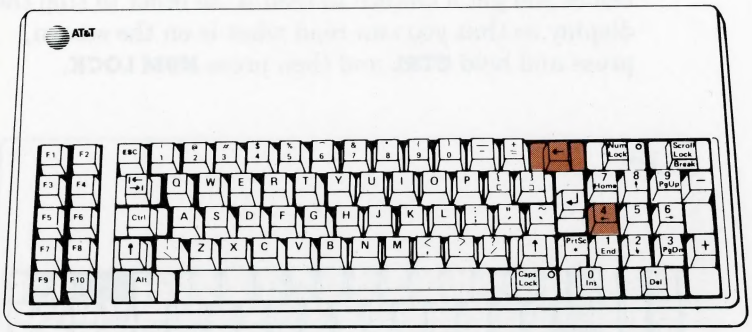
1. Wait until the A> appears.
2. Enter the command and any other information required. For example, it's sometimes necessary to include a drive specifier or a file specification in a command.
3. Press **RETURN** and the command procedure begins.

Entering an MS-DOS command is easy. Here are some simple rules:

- A command can be entered in uppercase or lowercase or any combination.
- Use a blank space to separate the parts of the command from one another.
- The MS-DOS command must be the first thing you type.

If You Make a Mistake

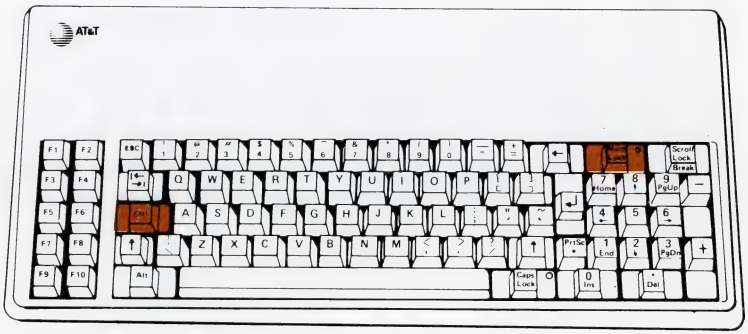
Sometimes you might make a mistake typing a command. You can correct an error two ways. You can press **BACKSPACE** which erases one letter at a time as it moves to the left, then retype your input. You can also use the **LEFT ARROW** to move the cursor to the left and make the necessary change.



Stopping the Screen to Read It

When the screen fills up with data, new information appears at the bottom, pushing what's at the top "up" and causing it to disappear from view. This process is called scrolling.

Some MS-DOS commands (for example, DIR and TYPE) cause text to be displayed on the screen at such a rapid rate that data may be scrolled out of sight before you get a chance to read it. In order to stop the display so that you can read what is on the screen, press and hold **CTRL** and then press **NUM LOCK**.

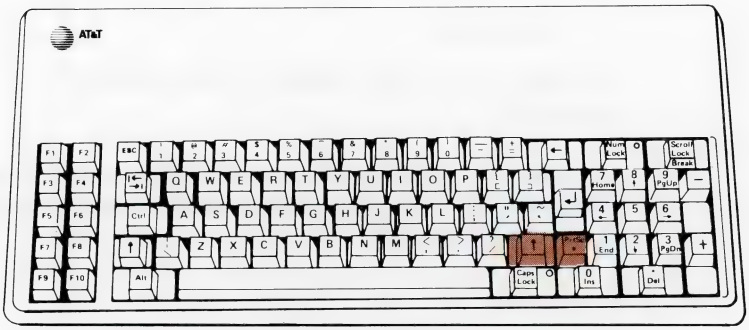


Press any key to resume the display of text.

Printing What Is on the Screen

You may want to have a printed copy of what is being displayed on the screen. For example, you may need a copy of a form or just one piece of information from a file.

If you have a printer attached to your computer you can get an exact copy of what is displayed on the screen by pressing and holding **SHIFT** and then pressing **PR SCR**.



The Default Drive

The "A" in the prompt indicates the default drive. The default drive is the diskette or fixed disk drive that MS-DOS uses to perform the command you've entered. When you enter a command or filename, MS-DOS automatically searches the diskette located in the default drive for this information, unless you indicate another drive in the file specification. For example:

```
A>DIR
```

searches drive A for a directory of files. Since no drive is specified, the default drive A is assumed. However:

```
A>DIR B:
```

searches drive B for a directory since drive B is specified.

It is possible to change the default drive in the prompt. Enter the new drive designation letter and follow with a colon. For example:

```
A>B:
```

If you press **RETURN** after this command, the new prompt appears:

```
B>
```

To find a directory on a diskette in drive A, you would now have to enter:

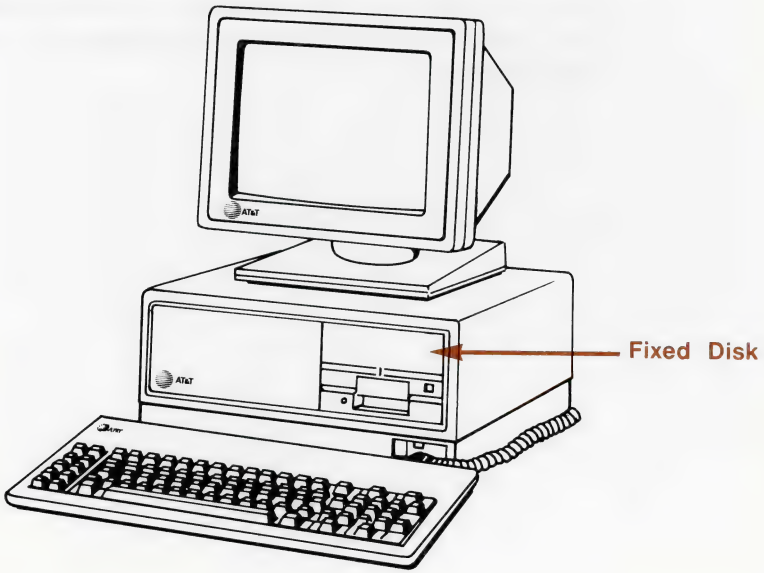
```
B>DIR A:
```

Using a Fixed Disk Drive

If your computer is equipped with a fixed disk drive you must carefully consider how to best use your fixed disk before you prepare it to receive program and data files.

If MS-DOS is the only operating system you are ever going to use, then the procedure is simple. Refer to the section in this chapter called **Using MS-DOS Only** for a step-by-step guide.

If you are planning to use more than one operating system, or **may** choose to do so in the future, read through this entire section before starting to set up your fixed disk. If you are going to use more than one operating system you must allocate storage space on the fixed disk for each operating system. This is called "partitioning" the disk. Each operating system resides in its own partition.



Some considerations:

- How many people will be using this computer? They may want to have their own subdirectory and may want to use another operating system.

- You **can** partition the fixed disk for other operating systems later. However, you must perform several steps to remove existing files onto backup diskettes, then reformat and partition the fixed disk, before you can replace the existing files back into the MS-DOS partition.

- Despite the seemingly unlimited amount of storage available with a fixed disk (10 million characters), partitioning the disk for two or more operating systems divides the available space. Be certain that having more than one operating system is what you want.

- To set up other operating systems on your fixed disk drive, refer to the appropriate documentation for the other systems.

Using MS-DOS Only

If you are going to use MS-DOS exclusively with your fixed disk, follow these steps.

1. Start the computer with a backup MS-DOS Systems diskette in drive A.

2. When the A> prompt appears, type:

   FDISK

   and press **RETURN**.

3. When the FDISK options menu appears choose #1 – Create MS-DOS Partition.

4. When you are asked "Do you wish to use the entire hard disk for MS-DOS (Y/N)?" Type

   Y

   and press **RETURN**.

   The entire fixed disk is now allocated for MS-DOS operations.

5 You must now restart your computer with MS-DOS and prepare the fixed disk to receive data. Press and hold **ALT, CTRL**, then press **DEL** to restart the computer. MS-DOS now recognizes the fixed disk as drive C.

6 To format the fixed disk, wait for the A> prompt to appear, then type

FORMAT C:/S

and press **RETURN**.

NOTE: Formatting a fixed disk takes several minutes. The screen displays the message "Formatting .....". When the process is finished, a message appears and the hidden system files are also placed on the fixed disk so you can start the computer from the fixed disk.

7 Copy all of the external MS-DOS commands and related programs to the fixed disk by typing:

COPY *.* C:

and press **RETURN**.

Your fixed disk can now be used to start your computer. Whenever you turn your computer ON or press the RESET button, leave drive A open and MS-DOS selects drive C as the default drive.

Partitioning Your Fixed Disk

If you are using more than one operating system with your fixed disk, you must partition the disk. This allows each operating system to occupy space tailored to its exact needs for proper operation. You may also want to partition a fixed disk if several people are using the same computer. A partition can be set up for each individual user or category of users.

Each operating system that can be used with a fixed disk has its own commands for placing it on the disk. Refer to that operating system's user's guide for instructions on placing it in its own partition on a fixed disk.

The MS-DOS program that performs the partitioning of your fixed disk is FDISK.COM. It is on the MS-DOS System diskette.

The FDISK command allows you to:

- Set the size of the MS-DOS partition
- Set a partition's position on the disk
- Select the active partition used when the computer is started
- Delete the MS-DOS partition
- Display the partition map.

Creating the MS-DOS Partition

1 Type:

FDISK

and press **RETURN**.

In a few seconds, the FDISK menu appears on the screen.

```
Fixed Disk Setup Program

FDISK Options


Choose one of the following:

      1 Create MS-DOS Partition
      2 Change Active Partition
      3 Delete MS-DOS Partition
      4 Display Partition Information

Enter choice ..............................: [1]

Press Esc to return to DOS ................  [ ]
```

2 Choose #1 Create MS-DOS Partition from the FDISK menu.

3 If the disk has not been already set up you are asked if you want to use the entire fixed disk for MS-DOS. Type:

N

and press **RETURN**. This causes a message describing the total number of cylinders your fixed disk has and the size and location of the contiguous cylinders. If there is nothing on the disk, these two amounts are the same.

NOTE: Space on a fixed disk is measured in cylinders. On your computer a cylinder is approximately 34,000 characters of storage space.

4 If your fixed disk **is already set up** this is displayed:

```
Fixed Disk Setup Program

Create MS-DOS Partition

  Partition      Status      Type      Start      End      Size
      1            A         DOS         0       304      305

Total disk space is 305 cylinders.
The current active partition is 1

Disk already has an MS-DOS partition
Press Esc to return to FDISK Options. [ ]
```

This shows a typical partition map with three partitions on the fixed disk. This information describes

- the partition status, Active or Non-active
- MS-DOS or non-MS-DOS contents
- the beginning and ending cylinder number of the partition
- the size of the partition
- total space on the fixed disk
- available space and location

5 Respond to the prompt

```
Enter partition size .....
```

by typing the number of cylinders you want to allocate for MS-DOS. Enter the number and press **RETURN**.

6 Respond to the prompt

```
Enter starting cylinder number ... nnn
```

by either pressing **RETURN** or entering another three-digit number. The default value displayed is the first cylinder of the smallest space that is large enough for the partition size you entered for step 5.

7 Respond to the prompt

Press **RETURN** to return to the FDISK Option

by pressing **RETURN** if you want to continue to use the FDISK command. Later you may want to check that the MS-DOS partition is active by going to the partition map display.

8 If you have not already set up your fixed disk with MS-DOS, you should now restart your system by pressing and holding **ALT**, **CTRL**, and then pressing **DEL**. Be sure to have the MS-DOS diskette in drive A.

9 Run FORMAT to format the MS-DOS partition on the fixed disk. Type:

```
FORMAT C:/S
```

10 When the format is complete, type:

```
COPY *.* C:
```

Steps 9 and 10 format the MS-DOS partition, move the hidden system files into the partition, then copy the MS-DOS external commands and related programs into the partition.

Your fixed disk is now ready to be used.

Changing the Active Partition

Enter the FDISK command and select #2 Change Active Partition from the menu. If you have more than two operating systems installed, be sure you know which one you want to make active.

Simply respond to the prompt

> Enter the number of the partition you want to make active .....

by typing the number of the partition you want to be the partition that starts your computer, and pressing **RETURN**. The displayed partition map is updated and the new partition is used as the startup file for your computer.

Deleting the MS-DOS Partition

Be careful. Deleting this partition destroys the contents of this part of the fixed disk. Be sure to make backup copies of the files. Use the MS-DOS command BACKUP before you continue.

To delete the MS-DOS partition, select #3 Delete MS-DOS partition from the FDISK menu. The partition map is displayed along with a "Warning" advisory.

To cancel the delete operation press **ESC**.

To proceed with the delete operation press **Y** and **RETURN**.

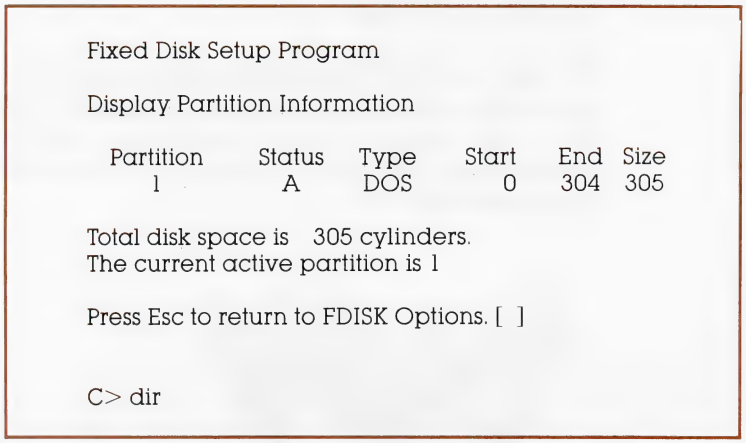
To restart your computer with MS-DOS after you have deleted the MS-DOS partition you must use an MS-DOS system diskette in drive A.

To restart your computer with another operating system you must either:

1. Select another active partition.
2. Use another system diskette in drive A.

Displaying the Partition Map

Option #4 Display Partition Data from the FDISK Option menu causes the partition map to appear on the screen.

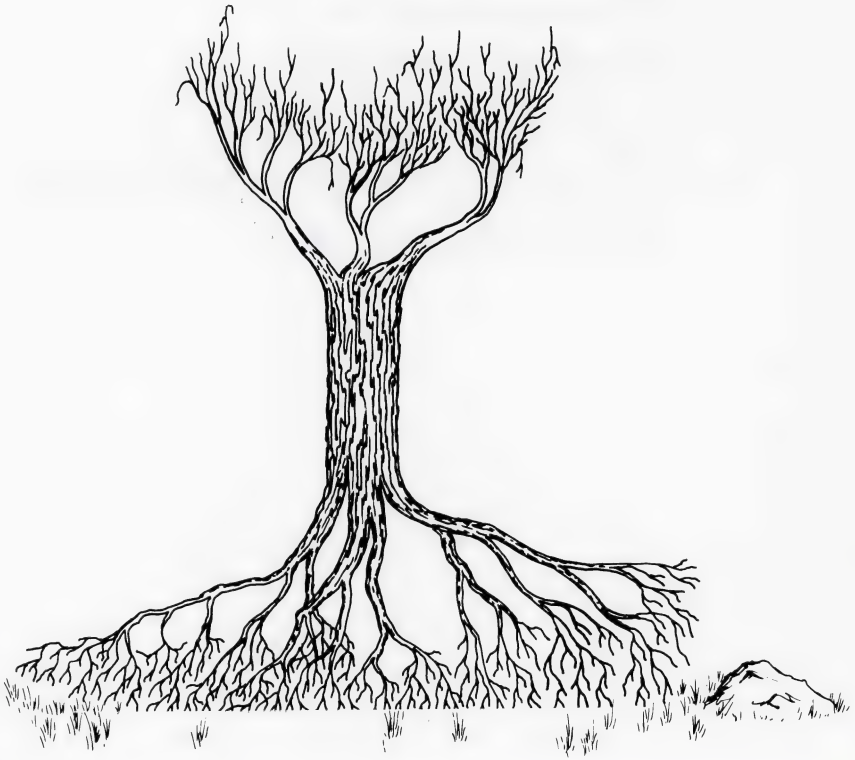


To return to the menu press **ESC**.

Organizing Your Fixed Disk

The information contained in this section is "helpful hints" about using a fixed disk drive. For new computer users, or users who haven't used fixed disks before, putting all available disk storage to best use can pose a challenge.

To help you, MS-DOS has the capability to create subdirectories and sub-subdirectories. Imagine an upside-down maple tree. (The trunk is in the air and the main branches and limbs are balancing all of this lightly on the ground. Got it?)



When you issue the MS-DOS **DIR** command, a complete listing of all the files on the specified drive appears on the screen. What is displayed are all of the files on that disk or diskette. If you've been using your fixed disk for storage for all of your work and program files, this can be a very, very long listing.

The DIR command is showing you **everything** in the "trunk" and branches of the tree. If you've got several hundred files on the disk — and this is not too difficult to do — it is both time consuming and tedious to locate a specific file if you've forgotten its exact name and extension.

What's more, if there are a large number of files in the directory, system performance slows down when your computer is looking for a specific file.

To solve these problems, you create subdirectories — branches and limbs of the main DIR tree. By establishing a path the DIR command can follow, you speed up processing. With faster processing you get your own work done more quickly.

A Sample Multi-level Directory

The following illustration shows how a fixed disk subdirectory structure might be set up.

Let's say this is Bill's computer and Mike and Sue work for Bill. They use his computer from time to time to prepare reports and budgets, so they have their own subdirectories. Mike is a financial analyst and does a lot of work with a spreadsheet program. Sue is a product manager and is involved with development and testing of new products.

Here is how Bill set up his disk directories.

```
Volume in drive C has no label
Directory of C:\

COMMAND     COM      15957   5-01-84  9:01a
AUTOEXEC    BAT          1   5-25-84  1:08p
CHKDSK      COM       6468   5-01-84  9:00a
COMP        COM       2766   5-01-84  9:00a
DISKCOPY    COM       2051   5-01-84  9:00a
EDLIN       COM       8078   5-01-84  9:00a
FC          EXE       2585   5-01-84  9:00a
FDISK       COM       4464   5-01-84  9:00a
FORMAT      COM       5872   5-01-84  9:00a
GWBASIC     EXE      69008   5-01-84  9:01a
.
.
.
PRIVATE     BILL     <DIR>   7-01-84  8:30a
CALCWORK             <DIR>   7-01-84  6:15a
DOCUMENT    WP       <DIR>   7-02-84  9:45a
TESTS                <DIR>   7-03-84  4:35a
```

In the main (ROOT) directory, Bill has placed all of the MS-DOS operating system and related programs. So, no matter who is using the computer, all of the MS-DOS functions are avaiable.

There are four subdirectories.

- A private directory for Bill
- The Spreadsheet directory that contains the spreadsheet program and two sub-subdirectories
- The Word Processing directory that contains the word processing program and two sub-subdirectories
- The Test subdirectory and two sub-subdirectories that contain files about the new products that Bill and Sue review.

Bill mapped out the fixed disk directories before he assigned them names. Then he used the MD (Make Directory) and CD (Change Directory) commands to create this structure. Here's how he did it:

1 Loaded MS-DOS into memory.

2 Created his personal directory by typing:

MD RETURN

This created the subdirectory BILL under the ROOT directory. Bill keeps his own programs and special files here.

After he starts his computer and the MS-DOS prompt appears, he types

CD\BILL

to get into his own directory.

3 To create the SPREAD subdirectory for the spreadsheet program and **its** subdirectories Bill typed:

MD C:\SPREAD

First, he created the subdirectory SPREAD under the root directory. Then he changed directory (CD) to SPREAD by typing

CD\SPREAD

Next, Bill typed:

MD\SPREAD\BILL

and

MD\SPREAD\MIKE

to create a subdirectory for himself and for Mike. The MD command can also be entered as MKDIR.

4 Bill repeated this process for the word processing directory (WP) with the commands:

CD\ (return to ROOT directory)

Then he typed:

```
MD C:\WP
```

to make a directory on drive C: named "WP". He then used the Change Directory command to enter the new WP directory by typing:

```
CD\WP
```

and created two subdirectories for his people who would be using the word processing directory, WP by typing in the commands:

```
MD\WP\BILL
```

and

```
MD\WP\SUE
```

5 To complete the directory-building process Bill typed in the following commands to create subdirectories under the directory named TEST:

```
CD\
MD C:\TEST
CD\TEST
MD\TEST\BILL
MD\TEST\SUE
```

Using Subdirectories

Whenever Sue wanted to get into the files she was keeping on the new products undergoing testing, she started the computer and issued the following commands:

```
CD\TEST\SUE
```

which identifies the path to her personal subdirectory under the TEST directory, and

```
DIR
```

which displayed a directory listing of all her files under that subdirectory so that she could select the file she wanted to work with.

By dividing up each user's files into subdirectories Bill provided an easy way for each computer user to access his or her own files out of the 200-odd files that were stored on the fixed disk. In this way, operation of the computer's file storage disk was speeded up, and making backup copies of each person's work files was made a good deal easier.